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(56) Documents Cited

**EP 0565134 A1 EP 0344701 A2 EP 0287074 A2
EP 0081017 A1 WO 89/05135 A1 WO 85/04107 A1
US 5281412 A US 5200171 A**

(58) Field of Search

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ONLINE DATABASES: WPI,CAS-ONLINE

(54) **Oral care products containing chlorites**

(57) An oral care product, such as a mouthwash or spray or a toothpaste contains an oxidising agent in the form of Group I alkali metal chlorite, preferably sodium chlorite.

The product may contain up to 5% by volume of the chlorite and optionally up to 8% w/v of bromelain.

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Oral care products

This invention relates to oral care products, a term which includes mouthwashes, toothpastes and oral sprays. Mouthwashes are liquid preparations intended to improve users' oral hygiene. In use they are decanted into a user's mouth, but not swallowed. They are dispersed in the mouth by violent agitation, so that the liquid passes over all the internal surfaces of the mouth, including the teeth and gums. The usual mouthwash contains a disinfecting agent, to cleanse the skin surfaces, and an agent intended to freshen the breath. Toothpastes are particularly employed to clean teeth by application to the bristles of a brush which is then used to remove food debris from between the teeth, and by gently abrading the teeth to remove stains and adherent films, such as of plaque. Mouthsprays are liquids which are sprayed under pressure in a fine spray into the open mouth to become deposited on the exposed surfaces of the cheeks, gums and teeth. The sprays become diluted by the saliva naturally present in the mouth, which saliva acts as a vehicle to bathe all the surfaces with the spray ingredients.

The present invention aims at providing an oral care product which, in addition to cleansing the internal surfaces of the mouth, also has a brightening or whitening effect on the teeth.

Accordingly, the present invention provides an oral care product which includes an oxidising agent in the form of a chlorite salt of a Group I alkali metal ion, such as sodium chlorite.

In its preferred ready-for-use form, the oral care product is a liquid or paste containing up to a maximum of 5.0% by volume or weight of sodium chlorite.

The product in its liquid form may be sold in such a diluted form as to be ready for use as sold. Alternatively, it may be concentrated to a greater extent, for either dilution prior to being used as usual, or for being

sprayed in its undiluted form into the mouth so that the spray becomes diluted by saliva in order to ensure that the concentration of sodium chlorite in the mouth remains below a maximum level.

It has been found that incorporation of this oxidising agent has a surprising effect on the teeth, in that it results in the teeth becoming whiter. This is thought to be the result of any deposits of dark or yellowish material on the teeth, such as plaque, being removed or bleached, so that the natural colour of the teeth can be seen more easily. The plaque and any food debris in the mouth are thought to be partially dissolved by the sodium chlorite solution, by chemical interaction therewith.

In practice the product would contain additional ingredients to give it enhanced properties. In its commercial form, it is envisaged that the product would have the following composition:

<u>Ingredient</u>	<u>Range</u>	<u>Percentages</u> <u>Preferred</u>
Sodium chlorite	0.01 - 5.0	0.2
Sodium bicarbonate	0.2 - 12.0	4.0
Sodium fluoride	0.01 - 1.0	0.32
Zinc citrate	0.01 - 2.0	0.8
Bromelain	up to 8.0	0.5
Papain	up to 8.0	0.125
Triclosan	up to 1.0	0.3
Xylitol	up to 6.0	2.0

When the product is a liquid, the percentages are by weight or volume, whereas when the product is a solid (as a paste), the percentages are weight over weight.

When the product is in its liquid form, as either a mouthwash or spray, then the above composition would have deionised water added to it to bring it to the desired concentration.

The hydrogen ion concentration (pH) value of the mouthwash form of the invention is about 6.5, to ensure stability before use. When the mouthwash is used, it is believed that the sodium chlorite reacts under the usual acidic conditions in the mouth to generate chlorine dioxide, which is itself a powerful oxidising and anti-bacterial agent. Both chlorites and chlorine dioxide oxidise malodorous thiol compounds which are responsible for halitosis, so that use of the product of the present invention tends to lead to sweeter breath.

In its liquid form, the present invention provides a mouthwash with disinfectant and cleansing properties, and with the additional advantage of improving the appearance of the teeth significantly, and without brushing. In either its paste or liquid form, it has also been found that sodium chlorite reacts with any nicotine stains on the teeth, or elsewhere in the mouth, both to remove or bleach the stains and to release substances which taste so disagreeable as to deter smokers from continuing to use the mouthwash if they wish to continue smoking. It can therefore form an effective component in any aversion-therapy course for smokers.

Claims

1 An oral care product comprising an oxidising agent in the form of a chlorite of a Group I alkali metal ion, such as sodium chlorite.

2 A product as claimed in claim 1, containing up to 5.0 percent by volume of sodium chlorite.

3 A product as claimed in claim 1 or 2, containing bromelain, up to a maximum of about 8.0% w/v.

4 A product as claimed in claim 1, having the composition:

<u>Ingredient</u>	<u>percentage</u>
Sodium chlorite	0.01 - 5.0
Sodium bicarbonate	0.2 - 12.0
Sodium fluoride	0.01 - 1.0
Zinc citrate	0.01 - 2.0
Bromelain	up to 8.0
Papain	up to 8.0
Triclosan	up to 1.0
Xylitol	up to 6.0.

5 A product as claimed in claim 4, of composition:

<u>Ingredient</u>	<u>percentage</u>
Sodium chlorite	0.2
Sodium bicarbonate	4.0
Sodium fluoride	0.32
Zinc citrate	0.8
Bromelain	0.5
Papain	0.125
Triclosan	0.3

5

Xylitol

2.0

6 A product as claimed in any preceding claim, made into a mouthwash by being dissolved in deionised water.

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Patents Act 1977
Examiner's report to the Comptroller under Section 17
(the Search report)

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Relevant Technical Fields

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(ii) Int Cl (Ed.5) A61K 7/20

Search Examiner
J F JENKINS

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Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-
1 TO 6

(ii) ONLINE DATABASES: WPI, CAS-ONLINE

Categories of documents

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| <p>X: Document indicating lack of novelty or of inventive step.</p> <p>Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.</p> <p>A: Document indicating technological background and/or state of the art.</p> | <p>P: Document published on or after the declared priority date but before the filing date of the present application.</p> <p>E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.</p> <p>&: Member of the same patent family; corresponding document.</p> |
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Category	Identity of document and relevant passages		Relevant to claim(s)
X	EP 0565134 A1	(ALCIDE CORPN) see examples I to V	1, 2 & 6
X	EP 0344701 A2	(PROCTOR & GAMBLE) see examples I to IV	1, 2 & 6
X	EP 0287074 A2	(ALCIDE CORPN) see examples I and V to VII	1, 2 & 6
X	EP 0081017 A1	(ALCIDE) see example III	1 & 2
X	WO 89/05135 A1	(C. HEDWARD. MEDI-TEAM) see example	1, 2 & 6
X	WO 85/04107 A1	(ALCIDE CORPN) see example	1, 2 & 6
X	US 5281412	(PROCTOR & GAMBLE) see examples I to III	1, 2 & 6
X	US 5200171	(MICROPURE INC) see example II	1 & 2

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).